Remark

Applicants respectfully request reconsideration of this application as amended. Claims 18, 19, 26, and 27 have been amended. No claims have been canceled. Therefore, claims 16-42 are now presented for examination.

Specification

Minor modifications have been to the Specification to correct certain typographical errors.

35 U.S.C. §112 Rejection

The Examiner has rejected claims 18, 19, 26 and 27 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, the Examiner has rejected **claims 18 and 26**, finding that it is unclear how the sample and hold amplifier matches the dynamic range of the photocell and the analog to digital converter. Claims 18 and 26 have been modified to address that it is the choice of the voltage or charge scale created by the sample and hold amplifier is utilized to match the appropriate dynamic ranges. In this regard, the relevant portions of the application are found in Figure 1 and the text found in the Specification beginning on page 7, line 22.

The Examiner has further rejected **claims 19 and 27**, finding that it is unclear how the sample and hold amplifier modifies the dynamic range of the photocell based on ambient light conditions and stating that "[t]here is no input to the photocell from the S/H amplifier." Initially, claims 19 and 27 have been corrected to be dependent on claims 18 and 26, respectively, and have been modified with respect to the scaling of voltage or

charge. As indicated in the modifications to claims 18 and 26, the dynamic ranges are matched by the choice of the scaled voltage or charge, which is produced by the sample and hold amplifier with the photocell charge and the reference voltage inputs.

The Applicant respectfully submits that, as amended herein, claims 18, 19, 26, and 27 distinctly claim the subject matter of the invention and are allowable under 35 U.S.C. § 112, second paragraph.

35 U.S.C. §102 Rejection,

Mechlenburg

The Examiner has rejected claims 16, 17, 24 and 25 under 35 U.S.C. 102 (b) as being anticipated by Mechlenburg, U.S. Patent No. 4,724,311 ("Mechlenburg").

Among other differences between the relevant claims and Mechlenburg, independent claims 16 and 24 provide for a sample and hold amplifier with a first input that is a charge from an analog photocell and an input that is a *reference voltage*. In this regard, the Examiner has cited to the sample and hold circuit 22 shown in Figure 1 of Mechlenburg. In addition to any other differences, the sample and hold circuit shown in Figure 1 contains a *single input* from the plurality of photodetectors. Although the Office Action indicates that there is "a second input to the S/H amplifier being a reference voltage (from 28)", it is respectfully submitted that no such input exists.

If sample and hold circuit 22 was intended to receive a second input, the symbolism used to illustrate the device would be very unusual because only one input is shown. There is no indication in Mechlenburg that a second input to the circuit is present or that a relevant reference voltage exists. It is extremely unlikely that a reference voltage for an analog amplifier would or could be produced by I/O device 28, which, in

the context of Mechlenburg and the illustration of Figure 1, clearly is a digital device. The only "reference" discussed in Mechlenburg is the comparison by the microprocessor 26 of the digital value of radiation incident on a photodetector to a "predetermined reference value" (*see* Mechlenburg, col. 5, lines 28-55), which thus is also a digital value and not a reference voltage.

From the circuit provided in Figure 1 of Mechlenburg and the circuit symbolism utilized, it is reasonable to conclude that the line from I/0 device 28 to sample and hold circuit 22 is an enable select line, which enables the operation of sample and hold circuit 22. As such, the signal is clearly is not a reference voltage and is not a input to an amplifier.

For at least the above reasons, independent claims 16 and 24 are not anticipated by Mechlenburg.

Claims 17 and 25 are dependent claims that, among other reasons, are allowable because they are dependent on the allowable base claims. In addition, it is noted that Mechlenburg does not provide for a sample and hold amplifier that produces a scaled version of the voltage output of an analog photocell. As indicated above, sample and hold circuit 22 does not have a reference voltage input to produce a scaled version of a voltage, nor does Mechlenburg indicate that any scaled version of a voltage is produced. Mechlenburg simply indicates that sample and hold circuit 22 individually samples the voltages produced by the photodetectors. (Mechlenburg, col. 2, lines 49-52) Therefore, claims 17 and 25 are not anticipated by Mechlenburg.

35 U.S.C. §103 Rejection,

Mechlenburg

The Examiner has rejected claims 18, 19, 26 and 27 under 35 U.S.C. 103(a) as being unpatentable over Mechlenburg.

The Examiner has found that certain elements of the claims are obvious under 35 U.S.C. 103(a). However, it is respectfully submitted that the relevant elements *would not have made sense* in the context described in Mechlenburg and could *not* have been added to system shown in Mechlenburg. For this reason, such elements cannot be found to be obvious herein based on Mechlenburg. An examination of Mechlenburg demonstrates that Mechlenburg has different purposes than the claims presented herein. The differences are such that matching or modifying the dynamic range, as presented in the relevant claims, would not have made sense in Mechlenburg.

Mechlenburg describes a system for a variably transmissive filter. The system includes a plurality of detectors for incident radiation and produces a signal based on the intensity of the radiation. A microprocessor compares the signal to a reference signal and produces an output to adjust the degree of transmission of radiation. (See, Mechlenburg, col. 1, lines 41-53 and col. 5, lines 28-34) In this regard, Mechlenburg describes the system shown in Figure 1. The sample and hold circuit 22 samples the output of one of the plurality of photodetectors 18-18b, with the output analyzed by microprocessor 26.

What is not present in Mechlenburg, and what does not make sense in this context, is the modification of the scale of an output to match the dynamic range of a photocell to the dynamic range of a digital to analog converter, or such modification of scale based upon the ambient light conditions. These elements are not and could not be

found in Mechlenburg. Mechlenburg is describing a system for limiting the transmission of radiation. "Means are provided for adjusting the degree of transmission of the elements in response to the intensity of the incident radiation such that the amount of incident radiation transmitted through the elements is controlled." With this stated purpose and the described means, changing a voltage scale to match dynamic ranges of the photodetectors and the analog to digital converter is not a reasonable addition. In Mechlenburg, changing a voltage scale would change the amount of radiation allowed through the system, which is contrary to the goal of controlling the amount of radiation transmission. Mechlenburg operates by comparing a signal to a reference signal to determine how much radiation is present. As Mechlenburg is determining the level of radiation to then limit the radiation allowed through the filter, changes in voltage scales and dynamic ranges makes no sense. Further, changing a voltage scale based at least in part on ambient light conditions makes no sense in the context of Mechlenburg. A change in ambient light does not modify the level of incident radiation that is being controlled by Mechlenburg, and changing the radiation transmission based on ambient light would create an illogical result.

For at least the reasons presented above, Mechlenburg does not teach or suggest the elements of claims 18, 19, 26, and 27, and it is respectfully submitted that such claims are allowable.

Mechlenburg in view of Gordon et al.

The Examiner has rejected claims 20-23 and 28-42 under 35 U.S.C. 103(a) as being unpatentable over Mechlenburg in view of U.S. Patent No. 3,833,903 of Gordon, et al. ("Gordon").

It is initially noted that claims 20-23 and 28-31 are claims dependent on claims shown above to be allowable. In addition to other reasons, such claims are allowable because such claims are dependent on the allowable base claims.

Claims 32 and 39 are independent claims that, as was discussed above in connection with claims 16 and 24, contain the element of a reference voltage as an input to a sample and hold amplifier. As stated above, the element is not present in Mechlenburg. Assuming that Gordon and Mechlenburg are properly combinable for the purposes of obviousness, Gordon does not add any teachings or suggestions that are relevant to this element. For at least this reason, it is submitted that claims 32 and 39 are allowable.

Claims 33-38 and 40-42 are claims that are dependent on claims 32 and 39. Although allowable for other reasons, such claims are allowable as being dependent on the allowable base claims.

While the foregoing demonstrates the patentability of all pending claims, it is noted that there are numerous other differences between the relevant claims and the cited references that are not explained herein, and the Applicant reserves the right to present such differences if necessary.

Conclusion

Applicants respectfully submit that the rejections have been overcome by the amendment and remark, and that the claims as amended are now in condition for allowance. Accordingly, Applicants respectfully request the rejections be withdrawn and the claims as amended be allowed.

Invitation for a Telephone Interview

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Request for an Extension of Time

Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

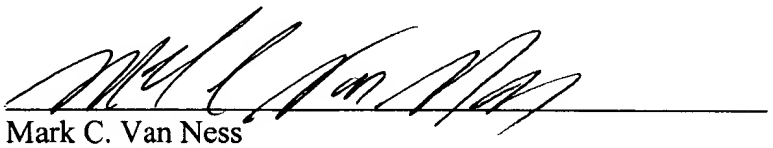
Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 5/9/02



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AMENDMENTS -- MARKED VERSION

Presented below are the amendments with markings to indicate changes made.

In the Specification:

Please delete the paragraph beginning on page 7, line 22 and continuing to page 8, line 13, and substitute the following in place thereof:

To ensure that the dynamic range of the counter matches the dynamic range of the photocells, the sample and hold amplifier 120 can be equipped to scale the input to VCO [120] 130 as appropriate. The dynamic range may be mismatched due to differing ambient light levels in the scene being captured. The variance in integration period that may result from a [charge] change in ambient light of the scene ensures that the captured image has the proper contrast. To adjust the dynamic range of the VCO [120] 130 to match the analog photocell, a global scaling voltage 160 can be applied to the sample and hold amplifier of each digital photocell in the array which uniformly adapts the VCO component in each photocell to have a dynamic range consistent with the present ambient light conditions. The enhanced digital photocell of Figure 1 may be utilized in a serial imaging device, or for use in parallel image processing architectures.

In the Claims:

Please amend the claims as follows:

18. (Once amended) The apparatus of claim 17, wherein the scaled version of the voltage output of the analog photocell produced by the sample and hold amplifier [matches] is chosen to match the dynamic [ranges] range of the analog photocell [and] with the dynamic range of the analog to digital converter.

19. (Once amended) The apparatus of claim [17] 18, wherein [the sample and hold amplifier modifies the dynamic range of the analog photocell] the output of the sample and hold amplifier is scaled based, at least in part, on ambient light conditions.

26. (Once amended) The method of claim 25, wherein the scale of the analog photocell charge is modified by the sample and hold amplifier [matches] to match a dynamic range of the analog photocell to a dynamic range appropriate for converting the output of the sample and hold amplifier to a digital value.

27. (Once amended) The method of claim [25] 26, [a dynamic range of the analog photocell is modified] wherein the scale of the analog photocell charge is based, at least in part, on ambient light conditions.